

Portland Harbor Superfund Site Draft Feasibility Study

Spring 2012

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Portland Harbor Superfund Site

- Nearly \$100 million for studies, investigation, and data analysis over 10 years
- Early cleanups have occurred in some areas
- Sampling results through 2010
- EPA will determine final cleanup

What we know

- Contamination generally higher in deeper sediments than surface layer
- Contamination generally higher near shore than in navigation channel
- Natural recovery occurring mainly because cleaner sediment from upriver is moving into the harbor

What we know

- Sediments contaminated mainly from historical use of river
- The potential risk from four chemical groups generally overlap the risks from other chemicals
- Those four chemical groups are:
 - PCBs
 - Dioxins/furans
 - The pesticide DDT and its related breakdown products
 - PAHs (polycyclic aromatic hydrocarbons)
- Contaminants also exist upstream

Surface Sediment PCBs



What we know

- Risk mostly from regularly eating local fish (bass, carp)
- No significant risk from swimming or beach use and eating migrating fish (salmon)
- Health advisories on fish consumption throughout all of Willamette River and not just Portland Harbor

Draft Feasibility Study Options

- Eleven alternatives
 - No Action (required by law to evaluate)
 - 5 are removal focused (dredging)
 - 5 are integrated (still involve significant dredging)
- Assumes sources will be controlled

Remedial Action Levels

Alternative	Portland Harbor RALs (parts per billion)						
	PCB	PAH	DDD	DDE	DDT	Dioxin/ Furans	Benthic Toxicity
A	None	None	None	None	None	None	None
B	1,000	20,000	NA	1,000	NA	NA	No Toxicity in 10 Years
C	750	15,000	NA	1,000	NA	NA	No Toxicity at Year Zero*
D	500	8,000	NA	200	NA	NA	No Toxicity at Year Zero*
E	200	4,000	100	50	150	0.02	No Toxicity at Year Zero*
F	75	1,500	50	20	60	0.01	No Toxicity at Year Zero*
G	50	600	15	10	20	0.005	No Toxicity at Year Zero*

* No toxicity immediately after active remedy completion.

Sediment Cleanup Areas



Draft Feasibility Study Options

- All adequately reduce risks to human health and environment (except the No Action Alternative)
- Differences - cleanup action levels, active cleanup time, impacts, use of technology, and cost

Cleanup Methods

Combinations of methods used in different areas of the Site

- Dredging
- Capping
- Treatment – in place or after dredging
- Innovative Technologies
- Monitored Natural Recovery
- Enhanced Monitored Natural Recovery

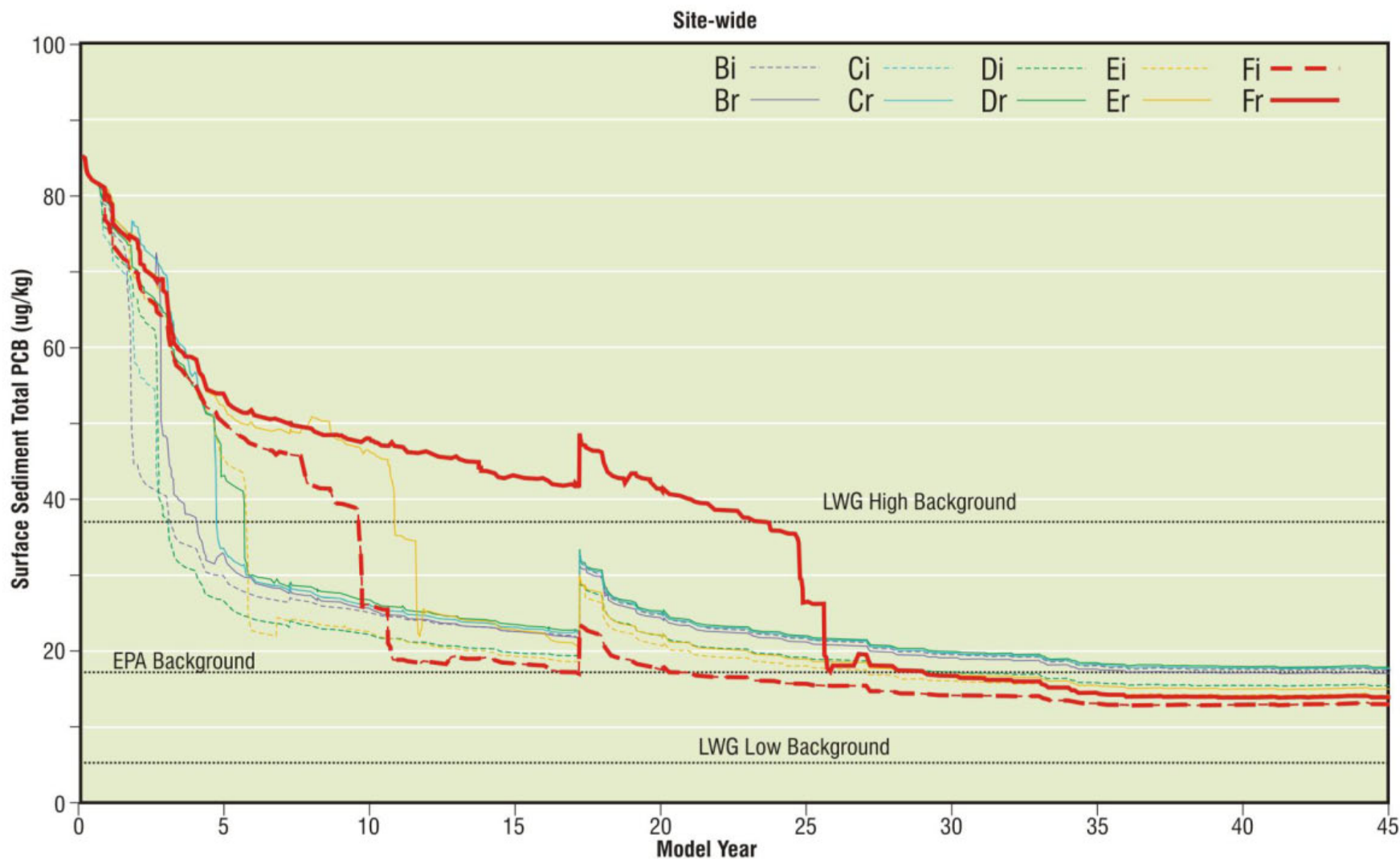
Alternatives

Alternative	Total Dredge Volume Removed	Dredge Areas	In-situ Treatment Areas	Engineered Cap Area	Use of CADs or CDFs ¹	Enhanced Monitored Natural Recovery	Years to Construct	Estimated Net Present Value Cost (\$Millions)	
	(Cubic Yards)	(Acres)	(Acres)	(Acres)				Low ²	High ²
B-i	198,000 to 293,000	23	19	7	None	75	2	\$169	\$250
B-r	541,000 to 783,000	42	0	13	CAD & CDF	41	6	\$228	\$330
C-i	314,000 to 459,000	34	29	13	CAD & CDF	40	3	\$231	\$345
C-r	777,000 to 1,127,000	63	0	10	CDF	73	7	\$304	\$449
D-i	387,000 to 565,000	43	34	15	CAD & CDF	37	3	\$266	\$398
D-r	914,000 to 1,321,000	78	0	13	CDF	68	8	\$351	\$520
E-i	936,000 to 1,362,000	91	58	25	CDF	15	7	\$463	\$709
E-r	1,775,000 to 2,596,000	145	0	21	CDF	15	12	\$568	\$884
F-i	2,129,000 to 3,151,000	176	117	49	CDF	3	15	\$878	\$1,389
F-r	4,196,000 to 6,182,000	304	0	38	CDF	3	28	\$1,077	\$1,762

1 - Confined Aquatic Disposal (CAD), Confined Disposal Facility (CDF)

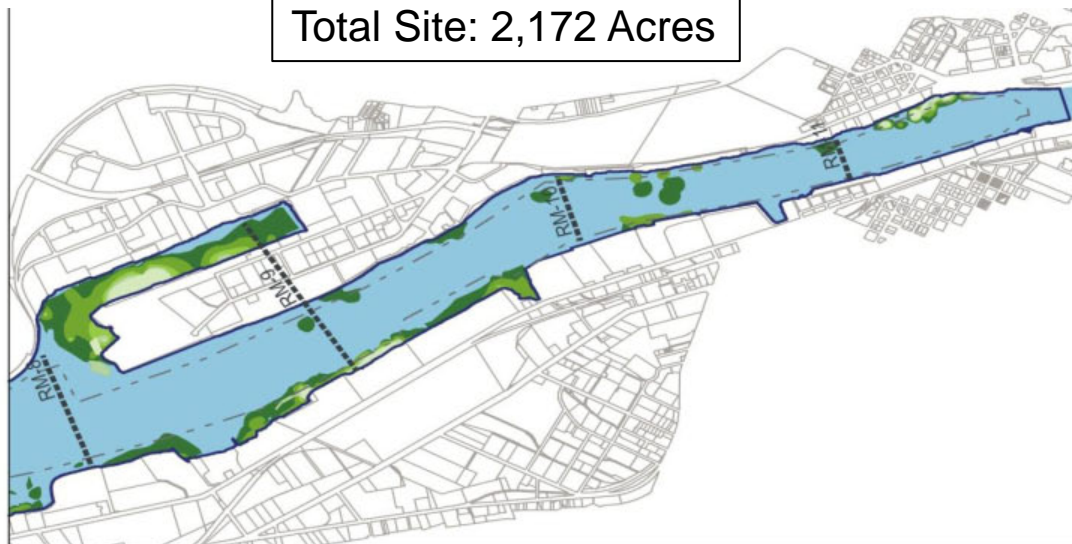
2 - The cost of the entire duration of the project in today's dollars.

PCB Sediment Concentration Over Time



Sediment Cleanup Areas

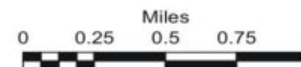
Total Site: 2,172 Acres



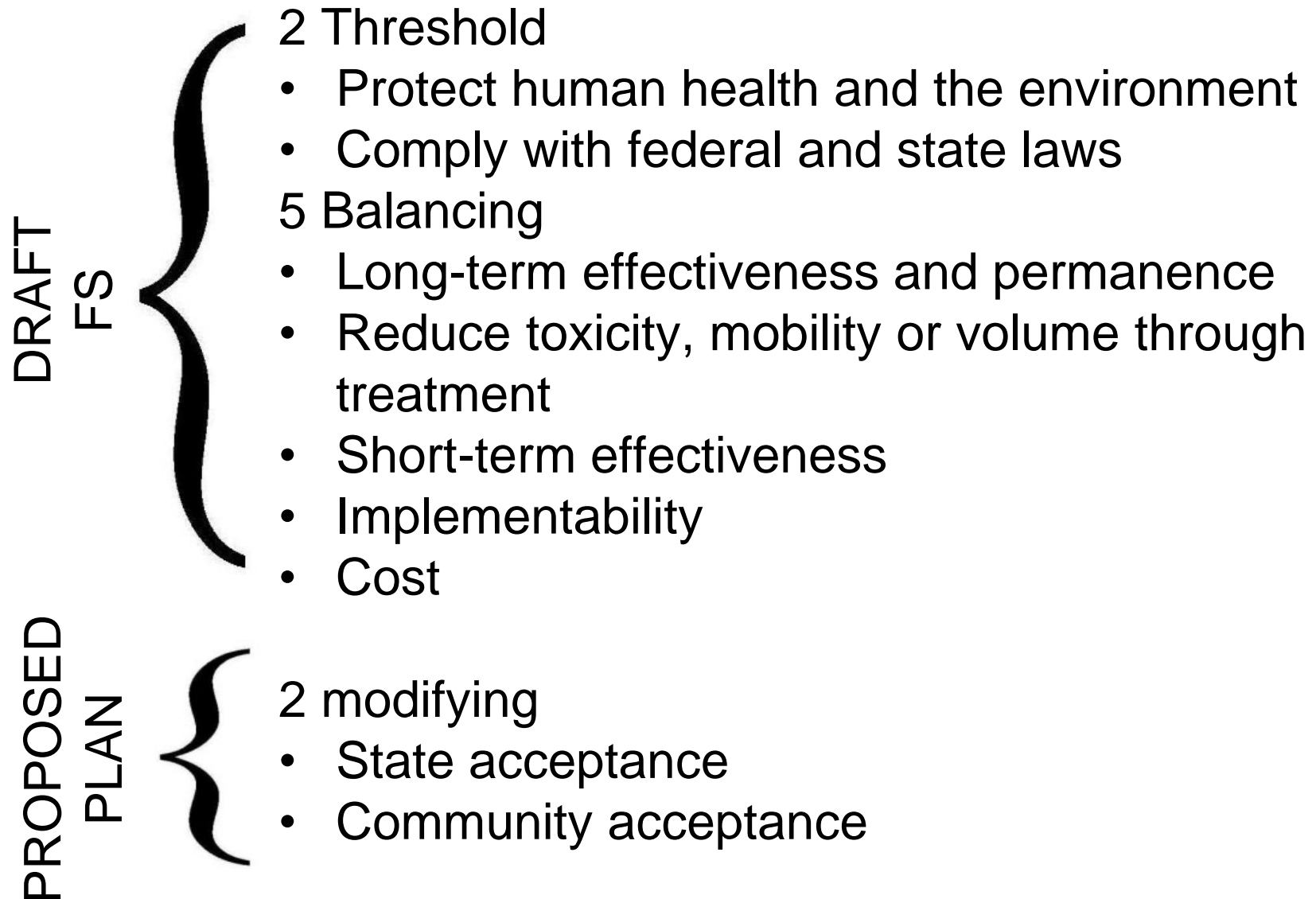
LEGEND

- Alternative B - 49 Acres
- Alternative C - 76 Acres
- Alternative D - 95 Acres
- Alternative E - 191 Acres
- Alternative F - 391 Acres
- River miles
- Portland Harbor Study Area
- Tax Lots
- Navigation Channel

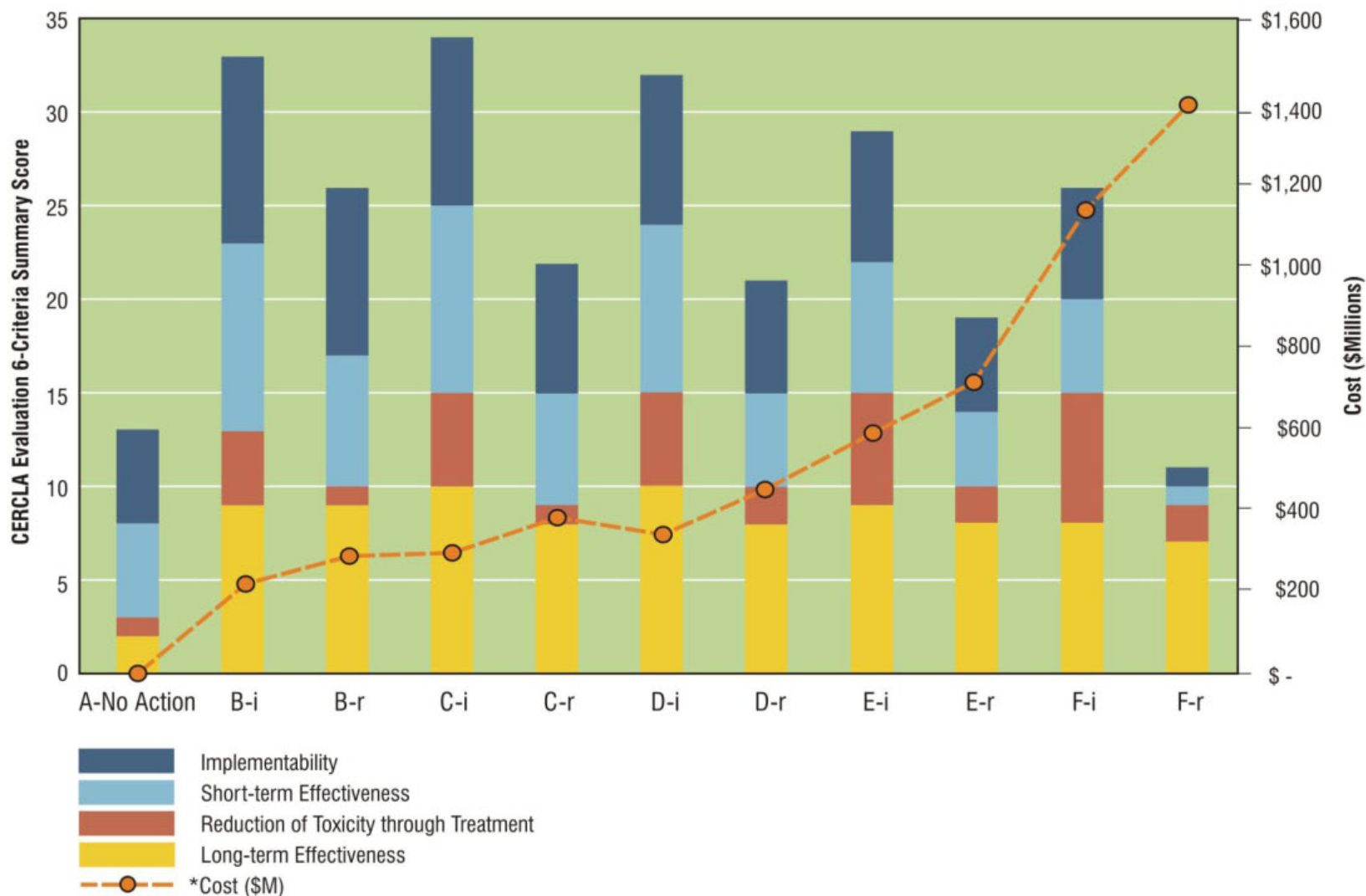
Note: EMNR areas are not shown for Alternatives B-F.



Superfund Cleanup Criteria

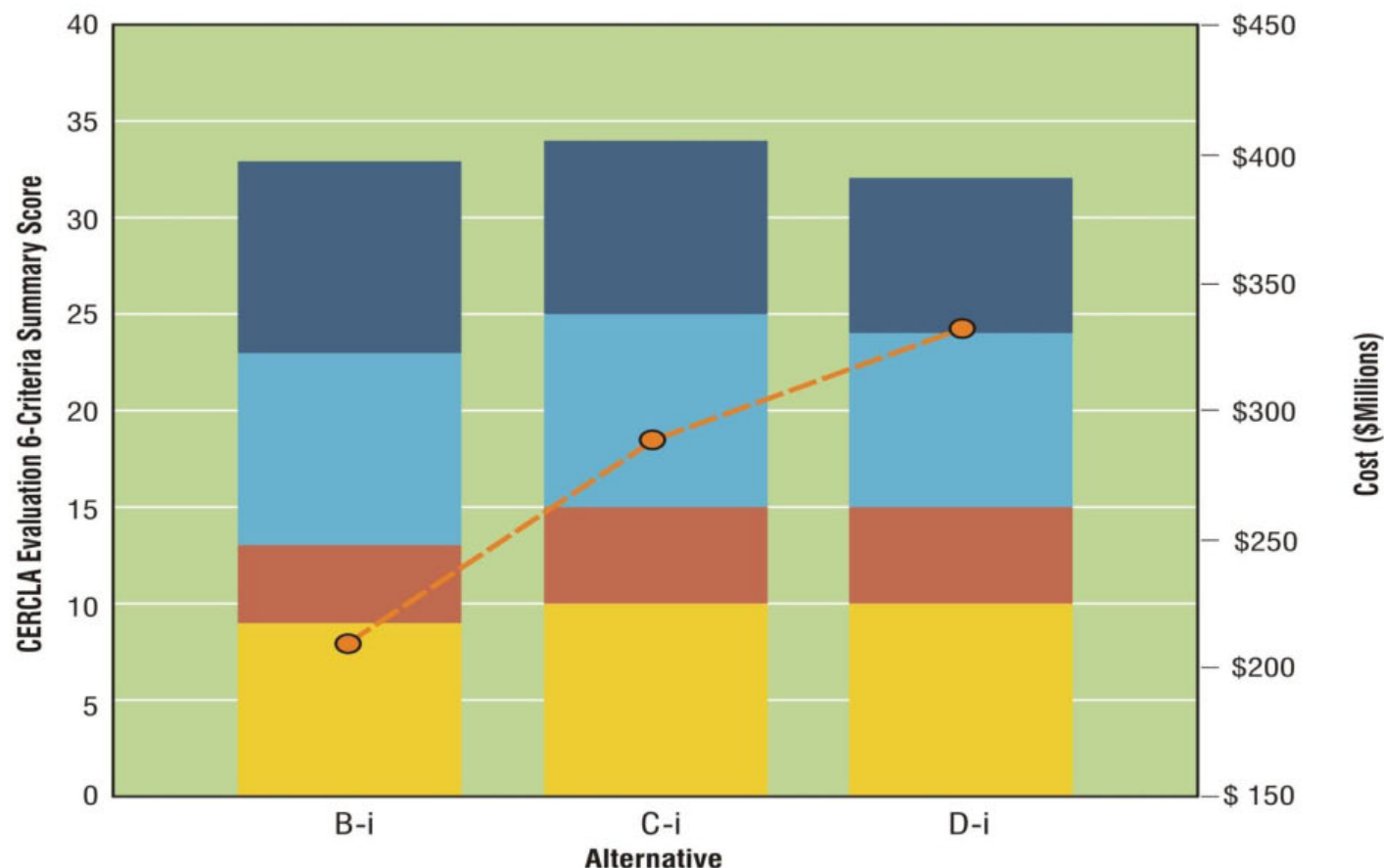


Alternatives Comparison



*The cost of the entire duration of the project in today's dollars.

Best Scoring Alternatives



- Implementability
- Short-term Effectiveness
- Reduction of Toxicity through Treatment
- Long-term Effectiveness
- *Cost (\$M)

*The cost of the entire duration of the project in today's dollars.

Next Steps

- EPA reviews draft Feasibility Study
- EPA prepares Proposed Plan
- Public Comment on Proposed Plan
- EPA issues Record of Decision
- Agreements for cleanup implementation
- Sources controlled
- Cleanup actions begin
- Monitoring over many years

Contacts

- EPA
 - www.epa.gov/region10/portlandharbor
- LWG
 - www.lwgportlandharbor.org
- Portland Harbor CAG
 - www.portlandharborcag.info